

during the interval of the experiment to the equivalent quantity for the primary vessel—

$$\left(\frac{2}{a} + \frac{1}{H}\right) \delta x = \left(\frac{2}{a} + \frac{1}{H_1}\right) \delta x_1.$$

II. To deduce from the corrected change of level in the primary vessel the relative density of Ozone and oxygen—

$$\frac{e-1}{e} = m \left(\frac{2}{a} + \frac{1}{H}\right) \delta x_{11}.$$

In these formulæ

a is the barometric pressure in terms of the sulphuric acid in the U-tubes.

H , the length of a tube of the same diameter as the U-tube of the primary vessel, and whose capacity is equal to that of the same vessel measured to the mean level of the acid in the U-tube.

H_1 , the same quantity for the auxiliary vessel.

δx_p , one-half of the change in the difference of levels in the U-tube of auxiliary vessel.

δx , the corresponding quantity for the primary vessel.

δx_{11} , half the observed change in the primary vessel corrected by the quantity δx .

m , the ratio of the weights of oxygen and Ozone in the gaseous mixture.

e , the relative density of Ozone and oxygen.

VI. "Contributions towards the History of the Phosphorus-, Arsenic-, and Antimony-Bases." By A. W. Hofmann, Ph.D., LL.D., F.R.S. Received June 18, 1857.

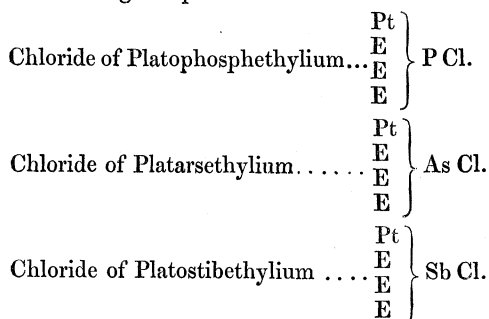
The facility with which the phosphorus-bases can be obtained by the action of zincethyl upon terchloride of phosphorus, has induced me to study the action of this agent upon the terchlorides of arsenic and antimony. I have found that triethylarsine and triethylstibine, hitherto obtainable only with difficulty, by submitting the alloys of

potassium with arsenic and antimony to the action of iodide of ethyl, may be procured by this process as readily and as abundantly as the phosphorus-bases.

In attempting to identify the substances obtained by the new process with those prepared by the old one, by the analysis of platinum- and gold-salts, I have been led to the discovery of a series of compounds of remarkable beauty.

Since the study of these bodies, and especially of their derivatives, which are particularly numerous and interesting, will involve considerable time, I beg leave to submit to the Royal Society, before the session closes, a brief sketch of those substances, the composition of which I have already established by analysis.

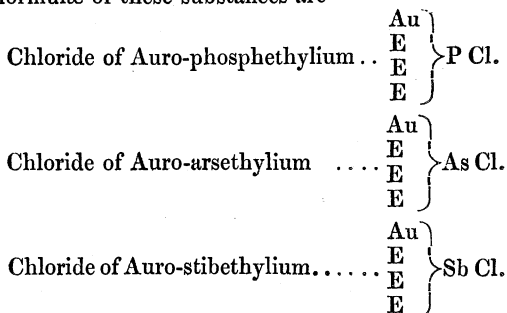
On adding a solution of bichloride of platinum to an alcoholic solution of triethylphosphine, of triethylarsine or triethylstibine as long as the colour of the platinum solution entirely disappears, the liquid deposits after a few moments magnificent slightly yellow or colourless crystals. The three salts thus formed may be considered as the chlorides of three compound ammoniums containing platinum and ethyl, united respectively with phosphorus, arsenic and antimony. They have the following composition :—



On substituting for the bichloride of platinum a solution of tetrachloride of gold, perfectly similar phenomena present themselves. The gold solution is entirely decolorized, and the colourless liquids deposit three gold compounds, which, remarkably enough, are of a dazzling white colour and silvery lustre.

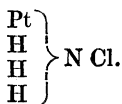
Analysis has proved these salts to correspond to the platinum-salts just mentioned, the platinum being replaced by an equivalent quantity of gold.

The formulæ of these substances are—

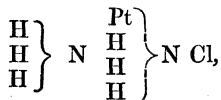


The complementary products formed in these reactions remain in the mother liquors of the several salts, from which they separate in the form of oily compounds which gradually solidify into crystalline masses. These I have not yet examined.

A glance at the above formulæ shows that the new compounds which form the subject of this note correspond to the chloride of platammonium,



It remains to be ascertained whether the chloride of plato-diammonium,



is likewise represented in the phosphorus-, arsenic-, and antimony-series.

VII. "On a New Series of Compounds derived from Ammonia and its Analogues." By EDWARD FRANKLAND, Ph.D., F.R.S. Received June 18, 1857.

Although zincethyl and its homologues are now well known to be capable of replacing electro-negative elements by ethyl, &c., yet it could scarcely have been anticipated, that substitutions of an almost opposite character would be effected by the same reagent ; neverthe-